

REMARKS

By this Amendment, claims 45-49, 51-58, 60-65, 69 and 71-72 are amended, and claim 73 is added. Accordingly, claims 45-73 are pending in this application. No new matter is added. Reconsideration of the application is respectfully requested.

I. Rejection Under 35 U.S.C. §112, Second Paragraph

A. Off-Line Programming

The Office Action rejects claims 45-72 under 35 U.S.C. §112, second paragraph. This rejection is respectfully traversed.

The Office Action asserts that "the term 'off-line' appears to be a complex combination of negative and positive limitation derived from the context of the term. However, claims 45-72 do not recite just "off-line" but the term "off-line programming" which is clearly set forth in the specification:

The term "off-line programming" describes the creation of a part program without interfering with ongoing operation of a physical vision inspection system.

(Specification, page 2, lines 12-14.) The Federal Circuit, as recently as August 31, 2004, in *Home Diagnostic, Inc. v. Life Scan, Inc.*, Appeal No. 03-1370, stated that "...a patent applicant may define a term in prosecuting a patent," citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) where the Court stated that "a claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in the specification or prosecution history." (See also MPEP §2173.01.)

Accordingly, Applicant asserts that the complete phrase "off-line programming" is not indefinite and does not have "a complex combination of negative and positive limitations" as asserted by the Office Action, but should be construed to have the meaning defined in the specification.

In addition, the Office Action states: "Applicant has repeatedly asserted that the term **"off-line programming system"** in the preamble and in the body of claim 45 should be given patentable weight beyond the explicit limitations in the claim. The Examiner hereby gives the term some weight." However, a preamble should be treated as a limitation if it is necessary to give life, meaning and vitality to the claim. As stated by the Federal Circuit in *Eaton Corp. v. Rockwell International Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003):

In other words, when the claim drafter chooses to use both the preamble and the body to define the subject matter of the claimed invention; the invention so defined, and not some other, is the one the patent protects.... When the limitations in the body of the claim rely upon and derive antecedent basis from the preamble, the preamble may act as a necessary component of the claimed invention.

Claim 45, for example, relies upon the preamble and also explicitly recites "off-line programming." Accordingly, the term "off-line programming" recited in the preamble of claims 45, 55, 57, 65, 69 and 73 should be treated as a limitation.

B. Control Instruction

The Office Action also asserts that the term "control instruction" is indefinite. Claims 45, 46, 54, 55, 63, 65 and 69 are amended to delete recitation of the phrase "control instruction" without prejudice or disclaimer, in order to expedite examination.

Applicant respectfully submits that amended claims 45-72 satisfy the requirements of 35 U.S.C. §112, second paragraph, and respectfully requests the reconsideration and withdrawal of the rejection under 35 U.S.C. §112, second paragraph.

II. Rejections Under 35 U.S.C. § 103(a)

The Office Action rejects claim 45 under 35 U.S.C. §103(a) over "Modeling optical vision systems with innovative software" by Michael Stevenson et al. (hereinafter "Stevenson") in view of the article "Robotics"; and rejects claims 46-72 under 35 U.S.C. §103(a) over Stevenson in view of Robotics and further in view of U.S. Patent 5,137,450 to Thomas (hereinafter "Thomas"). The rejections are respectfully traversed.

Stevenson does not teach or suggest an off-line programming/machine vision inspection system or method including a user interface usable for off-line programming and a user alterable control elements usable to determine instructions usable to control the corresponding machine vision inspection system, as set forth in independent claims 45, 55, 57, 65 and 69. Additionally, Stevenson does not teach or suggest an off-line programming/machine vision inspection system or method usable to generate instructions for controlling a corresponding vision system, as set forth in independent claims 45, 55, 57 and 65. Stevenson also does not teach or suggest an off-line programming/machine vision inspection system or method including the capability of "generating at least one instruction usable in an inspection program for controlling the corresponding machine vision inspection system to inspect the at least one object inspectable by the corresponding machine vision inspection system, based at least partially on the current state of the user-alterable control elements," as recited in amended claims 65 and 72. Furthermore, Stevenson does not teach or suggest an off-line programming/machine vision inspection system or method the capability to "perform an inspection operation," as recited in amended claims 55, 57, 62, 68, and 69.

Stevenson is directed toward a system for *designing* or *analyzing* "optical vision systems". Specifically, Stevenson teaches that developing this type of quality-control "optical vision system" by trial and error would be a costly exercise if done by any method other than computer simulation. See Stevenson, page 32, col. 2, lines 16-20. Therefore, Stevenson teaches a system that includes two general purpose components: the Advanced Systems Analysis Program (ASAP) which is an optical and illumination, analysis and *design* tool; and Rhinoceros which is a 3-D graphical design program. See page 29, column 2, lines 6-20.

The combination of the functionality of ASAP and Rhinoceros approximately corresponds to that of a Rendering Engine 202, shown in Figure 3 of the application. Thus,

the simulation capability of this combination is characterized only as "tools that can simulate and analyze almost any optical vision system with high geometric and photometric accuracy."

See Stevenson, page 29, column 2, lines 16-20. Stevenson does not teach or suggest that ASAP and Rhinoceros can provide any other kind of simulation or analysis capability beyond rendering and analyzing an image with geometric and photometric accuracy. Thus, the collective user interface of ASAP and Rhinoceros is that of a rendering engine. Accordingly, Stevenson does not teach or suggest the off-line programming/machine vision inspection system or method of independent claims 45, 55, 57, 65 and 69.

The Office Action asserts that Robotics remedies the deficiencies of Stevenson. Specifically, the Office Action asserts that Robotics teaches, at pages 54-55, especially the top right figure on page 55, a portion for generation of an instruction for controlling a robot. Notwithstanding the assertions, Robotics does not remedy the deficiencies of Stevenson.

Robotics teaches a teaching pendant controlling a robot. However, the teaching pendant is manifestly an "*on-line*" programming system because it requires the physical presence of the robot. Thus, the teaching pendant is not "an *off-line* programming system usable to generate instructions for controlling a corresponding vision system" nor "a user interface usable for off-line programming," as set forth in independent claim 45, 55, 57, 65 and 69. Further, Robotics, like Stevenson, does not teach or suggest "an off-line machine vision inspection simulation system usable to generate instructions for controlling a corresponding machine vision inspection system," as recited in claim 57. For at least these reasons, Robotics fails to remedy the shortcomings of Stevenson.

The Office Action asserts that Thomas remedies the deficiencies of Stevenson and Robotics. Notwithstanding the assertions, Thomas does not remedy the deficiencies of Stevenson and Robotics as discussed above.

Thomas teaches a flight simulator relating to a different field of invention compared to that of a programmable machine vision inspection systems. See Abstract. Whereas a flight simulator necessarily requires an extraordinary level of similarity between the simulator and the corresponding machine to be of any utility whatsoever, in the absence of the teachings of the present application, it is not obvious that in the field of machine vision systems the same extraordinary level of similarity could be technically feasible, or desirable from an economic standpoint, in association with an off-line programming system for a machine vision inspection system.

Thomas does not teach or suggest that the flight simulator creates a variety of programs for a controlling a corresponding aircraft. Furthermore, Thomas has no need for focus dependent images or for providing programming. Thus, Thomas provides no motivation to combine with either Stevenson or Robotics. Thomas, like Stevenson and Robotics, does not teach or suggest providing an off-line programming system, much less a system usable to generate instructions for controlling a corresponding vision system. For at least these reasons, Thomas fails to remedy the shortcomings of Stevenson and Robotics.

For at least the reasons discussed above, independent claims 45, 55, 57, 65 and 69-72 would not have been rendered obvious by Stevenson, Robotics and Thomas, alone or in combination. Claims 46-54, 56, 58-64, 66-68 and 70-72 depend from the independent claims, and thus are also would not have been rendered obvious by Stevenson, Robotics and Thomas. Withdrawal of the rejections of claims 45-72 under 35 U.S.C. §103(a) is respectfully requested.

III. New Claim 73

The subject matter recited in claim 73 is supported by the specification at least at page 4, lines 24-27 and page 6, lines 22-32. Applicant respectfully submits that claim 73 is not rendered obvious by Stevenson, Robotics and Thomas, alone or in combination, because

these references do not teach or suggest an off-line programming system that includes a first portion of a machine vision system and a hardware component simulation system that simulates a second portion of the machine vision system, and that the off-line programming system generates instruction for controlling the machine vision inspection system, as recited in claim 73.

Stevenson is directed to "virtual simulations of optical vision systems." Stevens does not disclose, suggest or even recognize that the "virtual simulations" may or even could be connected to a portion of an actual system to operate instructions for the actual system, and there is no reason to do so.

Robotics is directed to robots having machine vision. There is not disclosure or suggestion for modeling or any need for such an activity. Thus, one of ordinary skill in the art would not have been motivated to combine Stevenson and Robotics. Indeed, there is provision in Robotics for such a simulation or contemplation in Stevenson for such a combination.

Thomas is directed to a flight simulator for pilots, and does not suggest in any way of combining the flight simulator with some portion of an actual airplane to generate instructions for the airplane. These supposedly possible combinations are surely speculative.

In view of the above, Stevenson, Robotics, and Thomas individually, or in combination do not disclose, suggest or remotely connect to the off-line programming system recited in claim 73. One of ordinary skill in the art would not have been motivated by these references to make any combination, much less the combination recited in claim 73.

Accordingly, claim 73 is patentable over Stevenson, Robotics and Thomas.

For at least these reasons and the reason set forth with respect to claims 45-73, Applicant respectfully submits that neither Stevenson, Robotics nor Thomas, alone or in combination, teach or suggest the off-line programming system set forth in claim 73.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 45-72 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


James A. Oliff
Registration No. 27,075

Holly N. Moore
Registration No. 50,212

JAO:HNM/kzb

Attachments:

Amendment Transmittal
Petition for Extension of Time

Date: September 10, 2004

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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